Experiment 4

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Subject Name: Project Based Learning in Java with Lab **Subject Code: 22CSH-359**

1. **Aim: Write a Program to perform the basic operations like insert, delete, display and search in list. List contains String object items where these operations are to be performed.**
2. **Objective: The objective of this program is to implement basic operations (insert, delete, display, and search) on a List containing String objects. The program will demonstrate how to manipulate a list using common list operations in Java, providing functionality to manage and interact with data stored in the list.**

3. **Implementation/Code:**

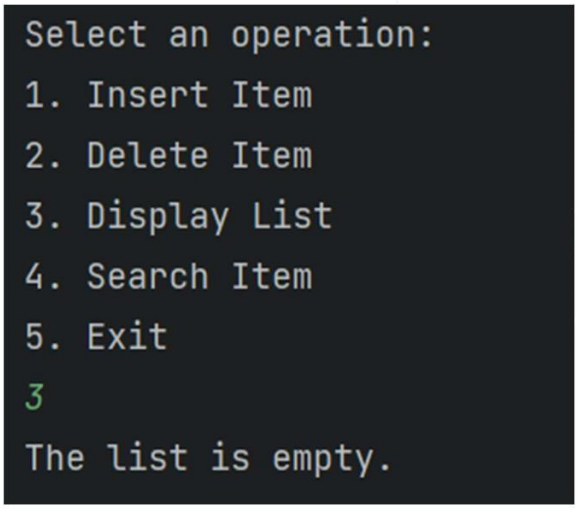
```
import java.util.ArrayList;
import java.util.Scanner;

public class StringListOperations {

    private static ArrayList<String> list = new ArrayList<>();

    public static void insertItem(String item) {
        list.add(item);
    }

    public static void deleteItem(String item) {
        if (list.contains(item)) {
            list.remove(item);
            System.out.println(item + " has been removed.");
        } else {
            System.out.println(item + " not found in the list.");
        }
    }

    public static void displayList() {
        if (list.isEmpty()) {
            System.out.println("The list is empty.");
```

```
    } else {
        System.out.println("List items: " + list);
    }
}

public static void searchItem(String item) {
    if (list.contains(item)) {
        System.out.println(item + " is found in the list.");
    } else {
        System.out.println(item + " is not found in the list.");
    }
}

public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    int choice;

    do {
        System.out.println("\nSelect an operation:");
        System.out.println("1. Insert Item");
        System.out.println("2. Delete Item");
        System.out.println("3. Display List");
        System.out.println("4. Search Item");
        System.out.println("5. Exit");
        choice = sc.nextInt();
        sc.nextLine();

        switch (choice) {
            case 1:
                System.out.print("Enter item to insert: ");
                String insertItem = sc.nextLine();
                insertItem(insertItem);
                break;
            case 2:
                System.out.print("Enter item to delete: ");
                String deleteItem = sc.nextLine();
                deleteItem(deleteItem);
                break;
            case 3:
                displayList();
                break;
            case 4:
                System.out.print("Enter item to search: ");
                String searchItem = sc.nextLine();
                searchItem(searchItem);
                break;
            case 5:
```

```
                System.out.println("Exiting program.");
                break;
            default:
                System.out.println("Invalid choice! Please choose a valid option.");
        }
    } while (choice != 5);

    sc.close();
}
}
```

4. **Output:**

```
Select an operation:
1. Insert Item
2. Delete Item
3. Display List
4. Search Item
3. Display List
4. Search Item
5. Exit
2
Enter item to delete: Apple
Apple has been removed.
2. Delete Item
```



5. **Learning Outcomes:**
   1. Learn how to perform basic **CRUD (Create, Read, Update, Delete)** operations on a **List** of **String** objects in Java.
   2. Understand how to use the **ArrayList** class for dynamically storing and manipulating a collection of items.
   3. Practice handling **user input** using the **Scanner** class for interaction with the program.
   4. Implement methods for **searching**, **deleting**, and **displaying** items in a list efficiently.
   5. Gain familiarity with **control flow** and **loops** to allow for continuous user interaction until the program is exited.